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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,022	12/11/2003	M. Dalil Rahman	2003US312	2346

7590 03/21/2005
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EXAMINER

THORNTON, YVETTE C

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/734,022

Applicant(s)

RAHMAN, M. DALIL

Examiner

Yvette C. Thornton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Re

DETAILED ACTION

This is written in reference to application number 10/734,022 filed on December 11, 2003.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claim 5 recites the limitation "the aliphatic cyclic unit" in line 1. There is insufficient antecedent basis for this limitation in the claim. The independent claim does not require the aliphatic group to be cyclic.
3. Claim 12 recites the limitation "the antireflective coating" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. The independent claim does not require an antireflective coating.

Claim Rejections - 35 USC § 102

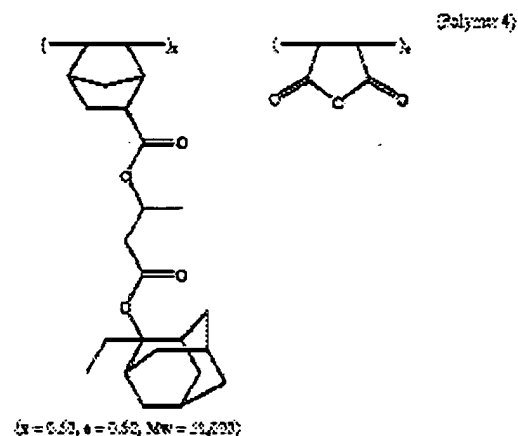
4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2, 4-10 and 13-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishi et al. (US 6,531,627 B2). Nishi exemplifies the synthesis of a polymer having the structure:

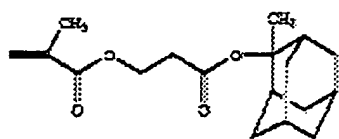
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(c. 48). The said polymer is admixed with a photoacid generator, a dissolution regulator, a basic compound and a solvent to form a photoresist composition (c. 51, l. 59-67). See example I-4. The taught resist was spin-coated on a silicon wafer, baked on a hot plate at 110 C for 90 seconds to give a resist film. The said film was then exposed using an ArF excimer laser stepper (193 nm), baked at 110 C for 90 seconds and developed with a solution of 2.38% TMAH in water to give positive patterns (ex. II and c.55, l. 25-48).

It is the examiner's position that repeating unit "x" meets the limitations of claimed structure 1 wherein A is norbornene (structure I of instant claim 4); W is a C3 branched alkyl (instant claim 6-7); R' is a C2 alkyl; R is hydrogen. Maleic anhydride (repeating unit "y") meets the limitations of instant claims 8-9.

6. Claims 1, 3 and 6-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishiyama (US 2004/0063827 A1). Nishiyama teaches a positive resist composition comprising (A) a resin having an aliphatic hydrocarbon groups in the side chains containing two specific type and (B) a photoacid generator (abstract). The said resin comprising a repeating unit represented by formula (Ia) and a repeating unit of formula (Ib) (p. 0017). A specific example of formula (Ia) is



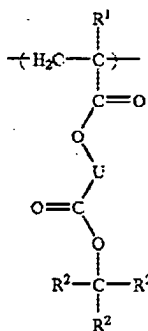
(Ia-25; p. 0079), which meets the limitations of the instant claims wherein

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A is vinyl group (instant claim 3, $m=0$); W is a C2 linear alkyl (instant claim 6-7); R' is a C1 alkyl; and R is hydrogen. The repeating units of (Ib) meet the limitations of a (meth)acrylate ester as set forth in instant claims 8-9. The taught composition is preferably coated on a ARC-29A layer (antireflective coating) on a silicon wafer and dried to form a resist film. The said film is exposed to ArF excimer laser (193 nm), baked for 90 seconds at 120C and developed with TMAH (p. 0346-0348; see also p. 0334-0340).

Although Nishiyama fails to exemplify repeating unit Ia-25, one of ordinary skill in the art would readily envisage a polymer comprising the said repeating unit from the disclosure. Therefore, the disclosure of Nishiyama clearly anticipates the claimed invention.

7. Claims 1, 3, 6-10 and 13-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishimura et al. (US 2003/0219680 A1). Nishimura teaches a radiation sensitive resin composition



comprising (A) a resin comprising the recurring unit (I) wherein U is a divalent bridged hydrocarbon group having 5-20 carbon atoms and R2 is most preferably 2-methyladamantanyl or 2-ethyladamantanyl (p. 0023) and (B) a photoacid generator (p. 0018-0019). In addition resin (A) may comprise one or more recurring units other than unit (I) (p. 0085-0087). Taught formula (II) meets the limitations of a cyclo olefin and taught formula (III) meets the limitations of a (meth)acrylate ester as set forth in instant claims 8-9. The said composition is coated on a silicon wafer, pre-baked, exposed with ultraviolet rays, post-exposure baked (p. 1050) and developed to form a positive image/pattern (p. 1047-1060; 1072-1077).

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8. The following prior art reference is similar to the cited prior art reference Nishiyama et al. (US 2004/0063827) and citable under 35 USC 102(e). For the sake of brevity, the rejection is not made herewith.

- Nakao (US 2004/0087694 A1), which teaches a positive type resist composition (c. 7, l. 32).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (US 6,531,627 B2) as applied to claims 1-2, 4-10 and 13-17 above, and further in view of by Nishiyama (US 2004/0063827 A1). Nishi teaches all the limitations of the instant claims except the use of an antireflective coating as set forth in instant claims 11-12. Nishiyama teaches the use of an anti-reflective coating coated on a silicon wafer to fabricate high-precision integrated circuit elements (p. 0335-0339). It is the examiner's position that Nishiyama discloses what is well known and conventional in the art. One of ordinary skill in the art would have been motivated by what is well known and conventional to incorporate an antireflective coating onto the exemplified substrate of Nishi.

11. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US 2003/0219680 A1) as applied to claims 1, 3, 6-10 and 13-17 above, and further in view of by Nishiyama (US 2004/0063827 A1). Nishimura teaches all the limitations of the instant claims except the use of an antireflective coating as set forth in instant claims 11-12. Nishiyama teaches the use of an anti-reflective coating coated on a silicon wafer to fabricate high-precision integrated circuit elements (p. 0335-0339). It is the examiner's position that Nishiyama discloses what is well known and conventional

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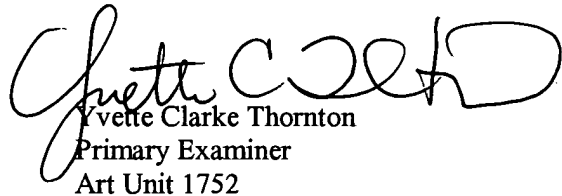
in the art. One of ordinary skill in the art would have been motivated by what is well known and conventional to incorporate an antireflective coating onto the substrate of Nishimura.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 571-272-1336. The examiner can normally be reached on Monday-Thursday 8-6:30.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Yvette Clarke Thornton
Primary Examiner
Art Unit 1752

yct
March 16, 2005